Space Weather Forecast

Issued on Friday, 09 December 2022 at 01:41 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Moderate flares throughout. Chance Minor Storms Day 1.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours. There are eight numbered sunspot regions on the visible disc, and a new yet to be numbered region in the southeast. AR3153 remains the largest region on the disc, relatively stable and inactive, only generating the isolated Common class flares of the period, despite its magnetically complex configuration. There is another magnetically complex region on the visible disc, as AR3157 but also remains stable. The only region to show some slight growth, is AR3161, although this region is still small, weak and magnetically simple. The remaining regions are all small, stable and magnetically simple.

No Earth-directed Coronal Mass Ejections (CMEs) have been seen in available satellite imagery. Although a couple of recent CMEs are being assessed, these are currently considered unlikely to have an Earth directed component.

Solar Wind / Geomagnetic Activity: Solar winds showed the continued influence of a coronal hole fast wind, wind speeds quickly increasing from slightly elevated levels, around 460 km/s, to elevated levels generally around 550 km/s. The solar wind peaked at 610 km/s at 08/1636 UTC. The strength of the solar wind's magnetic field was strong between 08/0400-1600 UTC, and also at the start of the day, and weak for the rest of the time. The important north-south component (Bz) was weakly southwardly directed early and late in the day, and predominantly positive in-between. Geomagnetic activity was Quite to Active.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to remain at Low levels, with a daily chance of isolated Moderate-class flares, most likely from either of the two larger regions on the disc. No new significant regions are expected to rotate onto the visible disc until, perhaps, at the end of the forecast period.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs have been observed in available imagery. Elevated solar wind speeds will likely persist for much of today (9 Dec) before steadily declining through the remainder of the period as the influence from coronal hole declines. Geomagnetic activity is expected to be initially Unsettled to Active, with a chance of isolated Minor Storm intervals early and late today. Geomagnetic activity is expected to return to Quiet to Unsettled conditions tomorrow, and to predominantly Quiet levels from day 3 (11th).

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: Solar energetic particles are expected to remain at background levels throughout, with a daily slight chance of seeing S1 levels if any significant flares were to occur.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	40	20	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	25	25	25	25
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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